UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/054,021	11/13/2001	Robert A. Weiss	UCT-0019	1427

23413 7590 01/02/2004

CANTOR COLBURN, LLP
55 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

EXAMINER	
JOLLEY, KIRSTEN	

ART UNIT	PAPER NUMBER
1762	

DATE MAILED: 01/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/054,021	WEISS ET AL.	
	Examiner	Art Unit	
	Kirsten C Jolley	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) *14-21* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-10,12 and 13* is/are rejected.

7)☒ Claim(s) *4 and 11* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a)☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *7/29/02* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Claim number 6 was skipped. Misnumbered claims 7-22 have been renumbered 6-21.

Election/Restriction

2. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-13, drawn to a method for making a conductive polymer composite, classified in class 427, subclass 244.

II. Claims 14-21, drawn to a conductive foam composite, classified in class 428, subclass 304.4.

The inventions are distinct, each from the other because of the following reasons:

3. Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by another materially different process, for example by impregnating a polymer with a catalyst wherein impregnating is performed in the presence of a volatile organic solvent.

4. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

5. During a telephone conversation with Leah Reimer on January 22, 2003 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-13. Affirmation of this election must be made by applicant in replying to this Office action. Claims 14-21 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

6. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Objections

7. Claim 8 is objected to because of the following informalities:

Claim 8 recites the limitation "the treated polyurethane foam" in line 4. There is insufficient antecedent basis for this limitation in the claim. Due to this limitation, claim 8 has been interpreted as being limited to a polyurethane foam as the polymer for purposes of examination.

8. Claim 12 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the

claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. As discussed in section 6 above, the polymer is already limited to a polyurethane foam in line 4 of claim 8, therefore the limitation of claim 12 is not further limiting.

Claim Rejections - 35 USC § 112

9. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

10. Claims 8-10 and 12-13 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for iodine vapor, does not reasonably provide enablement for all vaporous halogens. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims. Claim 8 claims "impregnating a polymer with a vaporous halogen." Applicant's specification is directed to the use of vaporous iodine for impregnating a polymer, and does not mention that other vaporous halogens may be used or provide details as how to to use the invention using a halogen other iodine. Therefore, it is the Examiner's position that the specification does not enable one having ordinary skill in the art to manufacture a conductive polymer composite using a vaporous halogen other than iodine. The Federal Circuit has repeatedly held that "the specification must teach those skilled in the art how to make and use the full scope of the claimed invention without 'undue experimentation'." *In re Wright*, 999 F.2d 1557, 1561, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993).

11. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12. Claim 13 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 13 is vague and indefinite because it is broader than and contrary to the independent claim 8. As discussed above in section 6, the polymer is already limited to a polyurethane foam in line 4 of claim 8, therefore the limitation of claim 13 is not further limiting and contradicts the independent claim.

Claim Rejections - 35 USC § 102

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

14. Claims 1-3 and 6-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Y. Fu, D. Palo, C. Erkey, and R. Weiss "Synthesis of Conductive Polypyrrole/Polyurethane Foams via a Supercritical Fluid Process", hereinafter referred to as Weiss et al.

Weiss et al. (cited in the IDS of July 29, 2002) discloses a method for the manufacture of a conductive polymer composite comprising the steps of: impregnating a polymer foam with a catalyst for the polymerization of polypyrrole using supercritical carbon dioxide as the solvent;

and exposing the impregnated polymer to a pyrrole vapor to form a conductive polymer composite. On page 7611, first full paragraph in the second column, Weiss et al. teaches impregnating polyurethane foam specimens with $Fe(CF_3SO_3)_3$ dissolved in supercritical carbon dioxide, exposing the impregnated polyurethane foams to pyrrole vapor. As discussed on page 2 of the specification, supercritical carbon dioxide is not considered a volatile organic solvent. Because Weiss et al. does not teach the use of a solvent other than supercritical carbon dioxide, it is the Examiner's position that the impregnation meets the limitation of impregnating occurring in the absence of a volatile organic solvent.

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

16. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Weiss et al. as applied to claims 1-3 and 6-7 above, and further in view of Y. Fu, R. Weiss, and M. Bessette "Conductive Elastomeric Foams Prepared by In Situ Vapor Phase Polymerization of Pyrrole and Copolymerization of Pyrrole and N-Methylpyrrole," hereinafter referred to as Bessette et al.

Weiss et al. discloses exposing the polymeric foam to $Fe(CF_3SO_3)_3$ in supercritical carbon dioxide as discussed above in section 11. Weiss et al. lacks a teaching of exposing the polymer to iodine in supercritical carbon dioxide. Bessette et al. (cited in the IDS of July 29, 2002) discloses the use of *in situ* vapor phase polymerization of pyrrole. Bessette et al. teaches

(in the first full paragraph of the second column on page 858) that oxidants for the polymerization of pyrrole include $CuCl_2$, I_2 (iodine), and $FeCl_3$. It is the Examiner's position that it would have been obvious for one having ordinary skill in the art, upon seeing the references of Weiss et al. and Bessette et al. in combination, to have substituted one of the oxidants taught by Bessette et al. such as iodine for the oxidant in Weiss et al., thereby performing impregnation with iodine in supercritical carbon dioxide, with the expectation of successful results since Bessette et al. teaches that iodine is a known oxidant for pyrrole and since Weiss et al. is not limited as to the oxidants that may be used in its invention.

Allowable Subject Matter

17. Claims 4 and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. While the prior art of Oka et al. (US 5,421,959) (Examples 10-11) and Wnek (US 4,394,304) teach using iodine vapor to dope a conductive polymer composite that has already been formed, the prior art does not teach or suggest impregnating a polymer with iodine vapor as an oxidant that can polymerize pyrrole. Also, it is noted that Bessette et al. ("Conductive Elastomeric Foams Prepared by In Situ Vapor Phase Polymerization..."), Bessette et al. (US 6,156,235), and K. Neoh, T., Kang, T. Tan, and K. Tan "Halogen-Induced Chemical Copolymerization of Pyrrole with N-Methylpyrrole" teach that iodine is a known oxidant for pyrrole. However, the prior art does not teach or fairly suggest that iodine may be applied in its vaporous form (instead of as a liquid in a solvent) to impregnate a polymer, in combination with

a second step of exposing the treated polymer to a pyrrole-monomer containing vapor to form a conductive polymer composite.

Conclusion

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Bugnet et al. (US 6,551,611) and Newman et al. (US Re. 35,278) are also cited to demonstrate the state of the prior art with respect to the claimed invention.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kirsten C Jolley whose telephone number is 571-272-1421. The examiner can normally be reached on Monday to Thursday and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P Beck can be reached on 571-272-1415. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1193.

Kirsten C Jolley
Patent Examiner
Art Unit 1762

kcj